



MedED EMQ Revision Course

Notes Set 1

These notes have been made from the learning slides of the previous 2-3 years of EMQ sessions. There may be some repetition of material and this **document is not exhaustive**.

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Respiratory

Shortness of Breath

COPD: many years with a smoker's cough, purulent sputum, wheeze, breathlessness, infective exacerbations

Fibrosing alveolitis: SOB, dry cough, clubbed, fine end inspiratory crackles
- ground glass, *honeycomb*

SARCOIDOSIS

- It is a multisystem granulomatous disease of unknown aetiology
- More common in young adults – females mainly
- Disease mainly affects Afro-Caribbeans
- It can be picked up in an asymptomatic individual (20-40%).
- 90% have abnormal CXR – bilateral hilar pulmonary lymphadenopathy +/- infiltrates or fibrosis
- Can get dry cough, progressive dyspnoea, decreased exercise tolerance and **chest pain.**
- Typical non-caseating granuloma (cf to TB) –
- **ACE**
- **Hypercalcaemia**
 - **Moans – Psychic moans – lethargy, fatigue**
 - **Bones – bone pain**
 - **Stones – Kidney stones**
 - **Groans – Constipation**
 - **Psychiatric overtones – depression and confusion**
- **Lupus pernio**
 - **Shows a predilection for the skin of the nose, cheeks and ears.**
 - **It is a raised, violaceous (red/blue) lesion with papules centrally**
- **Erythema nodosum**
 - **Tender red lumps or nodules usually seen on both shins.**
- **Can also present with anterior uveitis**
- **Watch out for diabetes insipidus, characterized by excessive thirst and large amounts of severely diluted urine.**

- **PE**
- **RISKS: Factor V Leiden**
- **Inherited Thrombophilia**

- **Others: Factor C deficiency**
- **Factor S deficiency**
- **Antithrombin deficiency**

- **Pregnancy – procoagulant state**

- **Can be a medical emergency and have**



- shock, cyanosis, collapse etc.
- V/Q scan used if there are no other respiratory problems and the CXR is clear
- CTPA (CT Pulmonary angiography) is used if the patient has other respiratory problems or abnormality in the CXR
- NB: in pregnancy, there is concern re: radiation dose for CTPA; however V/Q scans may deliver more than three times radiation dose of CTPA. Either can be used with consent, as risks of P/E to mother will outweigh risk to foetus

- Plasma D-dimer is used to exclude PE from patients that have a low risk of PE. D-Dimer may be raised in a number of other settings, hence only a **normal** D-dimer result is of any clinical value

PNEUMOTHORAX

- Can be primary, spontaneous (ie young thin men – in exams it tend to be in basketball players!!)
- Can be asymptomatic if small
- Sudden onset dyspnoea and/or unilateral pleuritic chest pain
- Make sure can differentiate from tension pneumo...
- Medical emergency –
 - Breathlessness
 - Sudden onset of unilateral chest pain
 - Cyanosis
 - Deviation of trachea
 - Absent chest expansion on affected side
 - Hyper-resonance on affected side

- Treatment – large bore cannula into 2nd intercostal space in the midclavicular line

Cough

Bronchiectasis

- Permanently dilated bronchi, Impaired clearance of secretions, Acquired and congenital causes

Infections often get:

Staph aureus

Pseudomonas aeruginosa

- Repeated infections

- Childhood problems e.g whooping cough

- Purulent sputum

Cystic Fibrosis

-autosomal recessive condition, commonest inherited disease in Caucasians

-recurrent chest infections, cough with copious sputum

- failure to thrive

- steatorrhoea (due to pancreatic insufficiency) and diarrhoea

-Examination may reveal clubbing, nasal polyps (nearly always due to CF in children)

-Sputum commonly cultures Pseudomonas, Staphylococcus aureus, Haemophilus

-Sweat test is diagnostic (Cl⁻ >60mmol/l, and Na⁺ lower than Cl⁻)



Goodpasture's disease – acute glomerulonephritis + lung symptoms, anti GBM antibodies

Wegener's – necrotizing granulomatous inflammation

- vasculitis of small and medium vessels

- ANCA

Tuberculosis

-Chronic symptoms of cough, haemoptysis

-Weight loss, fever and night sweats

-Think of TB in homeless, Indians, HIV positive

-Sputum culture with Ziehl-Nielsen stain (showing up acid-fast bacilli) is diagnostic.

Lowenstein-Jensen culture medium

-Caseating granulomata (Cf. sarcoidosis)

-Treatment with initial 6 months of four antibiotics (isoniazid, rifampicin, and in first two months, ethambutol and pyrazinamide)

-Side effects: Isoniazid (peripheral neuropathy), rifampicin (orange colouring of secretions), ethambutol (ocular toxicity), pyrazinamide (arthralgia)

Causes of Pneumonia/chest infections

Streptococcus pneumoniae – rust coloured sputum, rapid onset of fever with SOB and cough, most common form of pneumonia, precedes hx of viral infection,

- lobar consolidation AMOXICILLIN (sensitivity: erythromycin)

Staphylococcal/klebsiella – cavitating lungs

Mycoplasma pneumoniae – bilateral patchy consolidation

- non-specific symptoms, common in teens and 20s, headache, malaise which precedes chest symptoms, dry cough

- extra-pulmonary conditions

- cold agglutinin

Legionella pneumoniae – dry cough, dyspnoea, diarrhoea and confusion

plumber, recently on holiday in a hotel, shower and cooling

systems contaminated, usually middle-aged, smoker.

Deranged LFTs, hyponatraemia, typically bibasal consolidation in CXR

Pseudomonas aeruginosa – intensive care, - cystic fibrosis / bronchiectasis

Pneumocystis jirovecii (carinii) – HIV, bilateral hilar shadowing, drop in SATs with exertion

Chlamydia psittaci – Around any birds, especially parrots.

More generalised infective symptoms

Can go over a number of weeks/months.

Staphylococcus aureus

More in those post influenza virus

IVDU

Central venous catheters

Can get patches that become like abscess

VZV: vesicular rash, mottling in both lung fields, Chickenpox is primary infection –

after infection virus remains dormant in DRG – elderly, immunocompromised – pain in dermatomal distribution

Salmonella typhi: faecal/ oral spread, high fever, malaise and diarrhoea, CNS and delirium; Gram –ve bacilli



Coxiella Burnetti – animal hide workers.

Neisseria meningitidis type B : only vaccination against Meng C, high fever, neck stiffness and drowsiness, CSF: Gram –ve diplococci

Entamoeba histolytica: faecal/ oral, intermittent fever, swelling in hypochondrium - liver abscess, Trophozoites remain in bowel or invade extra intestinal tissues, leaving “flask-shaped” GI ulcers – severe amoebic dysentery

Mycobacterium TB: stone masons, fever, night sweats and cough, CXR: cavitating shadow

Falciparum Malaria : flu like illness followed by fever and chills, classic periodic fever and rigors; Signs: anaemia, jaundice and hepatosplenomegaly, no rash or lymphadenopathy

Dengue virus: fever, headache, myalgia, rash, thrombocytopenia and leucopenia

Lassa Fever: Nigeria, Sierra Leone and Liberia, fever and exudative sore throat, face oedema and collapse

Management of Acute Breathlessness

Asthma:

- SOB, wheezing, cough
- worse at night and early in the morning
- patient tires ☐ reduced wheeze ☐ intubate

Scheme for management of chronic asthma:

Step 1) Short acting B2 agonist as and when required (e.g. salbutamol)

Step 2) Add steroid inhaler as a preventer e.g. budesonide, fluticasone, beclometasone

Step 3) Add long acting B2 agonist e.g. salmeterol as first choice. If still suboptimal control, or no response, increase dose of inhaled steroids

Step 4) Add another drug e.g. leukotriene antagonist (montelukast, zafirlukast), theophylline, oral B2 agonist tablet (take care if already on long acting B2 agonist)

Step 5) Oral steroids e.g. prednisolone

Grading severity of asthma attack:

-Acute severe: PEF 33-50% predicted, RR \geq 25, HR \geq 110bpm, difficulty completing sentences

-Life-threatening: PEF <33% predicted, silent chest, poor respiratory effort, cyanosis, hypotension

Management of acute asthma:

-All patients with acute severe/life threatening need nebulised salbutamol and oxygen, and steroid treatment e.g. hydrocortisone

-BTS also recommends addition of nebulised ipratropium bromide (provides additional bronchodilation)

-If response is still poor, can administer IV magnesium sulphate

Sub-phrenic Abscess

- Accumulation of pus (dead NPhils) in a cavity



- Defensive reaction by body to prevent spread of infection
- Diagnosis
 - Recent surgery
 - Swinging fever and signs of infection with ?unknown cause
 - Patient ill
- Treatment
 - Incision/drainage
 - Antibiotics
 - Painkillers

Lung Cancer

- Elderly
- And sudden weight loss
- Most likely to be an ex-smoker

- **Bronchoscopy to diagnose but CT to stage.**

Need to visualise area
Allows ability to take samples also

CXR would be the most likely first test to be done
But Bronchoscopy and histology would confirm malignancy

Can send sputum for testing also.

Main lung cancers:

- Small cell carcinoma (15% of cases)
- Squamous cell carcinoma
- Adenocarcinoma (commonest lung cancer in non-smokers)
- Large cell carcinoma
- Mesothelioma (tumour of pleura)

Squamous cell, adenocarcinoma and large cell together constitute non small cell tumours (85% of cases)

Extrapulmonary signs:

Hypertrophic pulmonary osteoarthropathy (joint stiffness and pain in wrists, associated with clubbing)

SVC obstruction: direct invasion by bronchial CA, Obstruction of SVC: early morning headache, facial congestion, oedema in the arms, distended veins on chest and neck, occasionally blackouts

Recurrent laryngeal nerve palsy (hoarseness)



Horner's Syndrome (ptosis, miosis, anhidrosis, enophthalmos on affected side): together with wasting and weakness of small muscles of hand (due to brachial plexus involvement), is associated with **Pancoast's tumour**, a cancer of the apex of the lung

Bony metastasis: Symptoms of hypercalcaemia: bones (pain), stones (renal), groans (abdominal, secondary to peptic ulceration or constipation). Biochemistry: high plasma Calcium, dehydrated; two causes of hypercalcaemia associated with lung cancer: bony mets (more common) or ectopic PTH. Back pain: mets of spine

Paraneoplastic syndromes:

- SIADH (inappropriate ectopic ADH secretion, seen with **small cell lung cancer**, causing severe hyponatraemia, and potentially seizures, coma)
- Ectopic PTH (due to PTH related peptide, seen with **squamous cell carcinoma**, causing symptoms of hypercalcaemia)
- Ectopic ACTH (causing Cushing's Syndrome, seen with **small cell lung cancer**)
- Neurological e.g. Eaton-Lambert syndrome. An autoimmune mediated condition due to antibodies against pre-synaptic voltage-gated Calcium channels, associated with **small cell lung cancer**, causing a Myasthenia Gravis type picture **BUT**: strength improves with exercise, there may be absence of tendon reflexes, antibody is different

XRAY:

- Trachea/heart:
 - displaced towards a collapsed lung
 - -displaced away from pneumothorax
- HF – learn pattern of **ABCDE** (**A**lveolar oedema i.e. bats wing shadowing, **K**erley **B** lines, **C**ardiomegaly, **D**ilated upper lobe vessels, **E**ffusion)
- Bronchiectasis – tram line shadowing
- PE – wedge shaped infarct, often a normal CXR
- Fibrosis – ground glass appearance (early)
 - honeycomb appearance (late)

Learn emergency management for

- Acute severe asthma
- PE
- Pneumothorax
- Pulmonary oedema
- Pneumonia

Some revision tips for Resp exam:

- Clubbing – NOT asthma, COPD
- Stony dull – Pleural effusion
- Increased vocal resonance: consolidation. Reduced vocal resonance: effusion
- Fine Crepitations: pulmonary oedema, pulmonary fibrosis
- Coarse crepitations: bronchiectasis
- Pleuritic chest pain – PE, Pneumonia, Pneumothorax
- Stridor – Upper airway obstruction e.g bronchial ca, FB



Cardiology

CHEST PAIN – SOME GENERAL POINTS

Pleuritic chest pain – pain which is sharp pain that is exacerbated by respiration

- Can be pleural – localised to one side of chest – not position dependent.
 - Can be pneumonia; PE; pneumothorax
- Can be pericardial – centre of the chest and is positional (worse lying down and relieved by sitting)
 - Pericarditis post viral; post MI; post autoimmune
- **Tietze:**
 - The resulting discomfort can be similar to pleuritic pain but **local tenderness** is elicited on palpation of the lump
- **Pericarditis:**
 - Uraemia - MI (20% develop acute)
 - TB - Viral
 - RF
 - Pericardial friction rub – left sternal edge in expiration, leaning forward
 - Pancoast's tumour = Horner's – enophthalmos, anhydrosis, partial ptosis and meiosis
 - Constrictive pericarditis: lateral film = calcification, small heart on CXR
 - HOCM – look for a family Hx
 - Myxoma – exceedingly rare in life but not in EMQs... Look for cancer signs: wt loss, appetite loss, malaise d/t TNF/INF-g cytokine tumour response.
- **IE – RISK – mitral valve prolapse**
 - Recent dental work; rheumatic valve disease
 - Pan-systolic murmur: mitral/tricuspid regurg (IVDU)
 - Sometimes scenario is a patient with an old murmur (from rheumatic valve disease) who has developed a new murmur and some of the signs
 - Low grade fever/rigors, night sweats; splenomegaly
 - Infective emboli: Splinter haemorrhages, Osler's nodes (painful, finger-pulp), Janeway lesions (flat, painless, palm), petechiae, Roth spots (eyes)
 - Clubbing (1/5)
 - Ix: ESR, serial blood cultures, trans-oesophageal echo showing vegetations, haematuria
 - SBE vs ABE...
 - First thing you should do is give IV antibiotics if suspected. Then perform investigations to confirm.
 - Rheumatic HD – chronic fibrosing of a valve presenting with a mid-diastolic rumble (mitral)
 - RF: AUTOIMMUNE: Preceding viral throat infection
 - Migratory polyarthritis, erythema marginatum, Sydenham's chorea, carditis, subcutaneous nodules



– Group A β -haemolytic streptococcus cf. IE = α -haemolytic streptococcus, *Strep viridans*, (*Staph a*)

Mitral Regurgitation

'Jerky'/collapsing pulse

L Ventricular heave, apex

Pansystolic murmur – louder in expiration... Radiates – axilla

Tricuspid Regurgitation

N pulse

Pulsatile liver

Pansystolic murmur – louder in inspiration

JVP: Prominent 'v' wave, 'cv' wave

L parasternal heave

Aortic Regurg signs:

1. Austin-Flint murmur: mid-diastolic (Graham-Steell in pulmonary Regurg)

– The regurgitant wave hits a mitral valve leaflet and creates a murmur

2. Quincke's Sign: capillary pulsation in the nail beds

3. DeMusset's Sign: head nodding with systole

4. Duroziez's Sign: to and fro double murmur over femoral artery when pressure is applied

distal to site of auscultation

5. Traube's sign: Pistol-shot femorals: sharp bang heard over the femorals with each heartbeat

Aortic regurg can be acute or chronic. Chronic much more common and patient may have marfans or a congenital bicuspid aortic valve (most common valvular anomaly).

Acute due to aortic dissection involving the ascending aorta.

Aortic valve sclerosis – does NOT radiate to the carotids

- Caused by age-related degeneration of the heart
- Usually asymptomatic

Aortic stenosis – DOES radiate.

- Usually is symptomatic and presents with the classic triad:
 - Exertional dyspnoea,
 - Exertional angina
 - Exertional syncope
- ECG may show signs of left ventricular hypertrophy

Mitral stenosis

- Rheumatic fever
- Malar flush, tapping apex beat, loud S1, opening snap and rumbling mid diastolic murmur

Carey Coombs murmur: Acute RF

- L sided murmurs – loud in expiration



- R sided murmurs – loud in inspiration (TR – Cavallo’s sign)
- HOCM – AD, hypertrophy of ventricles, esp of IVS; double apical impulse – palpable 4th HS
d/t atrial systole
- Pericardial tamponade (medical emergency) – pericardiocentesis, pericardial fenestration:
 - CXR – globular heart
 - Echo
- N – JVP falls w/ inspiration

Graham Steell Murmur – Pulmonary regurgitation secondary to pulmonary hypertension resulting from mitral stenosis.

Austin Flint murmur – advanced Aortic regurgitation. It is a mid-diastolic murmur caused by the fluttering of the anterior cusp of the mitral valve caused by the regurgitant stream.

Machinery Murmur – caused by a patent ductus arteriosus, loudest during systole.

LEFT VENTRICULAR FAILURE

- Patient has LVF which commonly has a Gallop rhythm.
- A 3rd or 4th heart sound occurring in sinus rhythm may give the impression of gallop.
- When S3 and S4 occur in tachycardia eg with PE, they may summate and appear as a single heart sound, a summation gallop.

3rd heart sound: occurs just after S2. Pathological over 30. A loud S3 occurs in dilated left ventricle with rapid filling (eg mitral regurg, VSD) or poor left ventricular function (post MI, dilated cardiomyopathy)

4th heart sound – just before S1.

- Always abnormal, it represents atrial contraction against a ventricle made stiff by any cause (eg aortic stenosis or hypertensive heart disease.)

CONSTRUCTIVE PERICARDITIS

- It is an uncommon chronic disorder.
- It presents like congestive cardiac failure (so both right and left side heart failure signs)
- The most important sign is the **prominent X and Y descent in JVP.**
- Can be idiopathic (most cases) or can be related to repeated inflammation (TB or Rheumatoid).

CARDIAC TAMPONADE

- Usually presents acutely, usually as the result of a sudden accumulation in the pericardial space.
- Hypotension and tachycardia
- Raised JVP with **prominent X descent BUT absent Y descent!**



Hypertrophic obstructive cardiomyopathy

- AD
- Sudden cardiac death
- Prominent apex beat, jerky carotid pulse, harsh ejection systolic murmur

AF

- Ax = Age! HTN, IHD, MVD, ETOH, Thyrotoxicosis
- Types
 - Paroxysmal
 - Persistent (Secondary to reversible cause)
 - Permanent (Consider DC CV – often fails due to enlarged LA)
- Results in LVH, failure and embolic phenomena (Brain, legs and Gut!)
- Diagnose on ECG then ECHO – assess LA and LV size plus valve disease
- Mx = Rate vs rhythm control
 - Rate = AVN so B Blocker
 - Rhythm = chemical (amiodarone) or electric (DC CV)
 - **Anticoagulate** (Aspirin vs Warfarin)... CHADS score + pt risk e.g. falls – CHADS₂ (Congestive heart failure, hypertension, age, diabetes, previous stroke/TIA) if >1 then anticoagulate with warfarin. Aspirin should only be used if warfarin contraindicated. Move towards treating patients with a CHADS₂ score =1, they are risk stratified into low and high risk by CHADS₂VASC and high risk should also be anticoagulated. Watchman Left Atrial appendage device being trialled clinically as a surgical alternative to anticoagulation in those who warfarin is inappropriate or INR difficult to control and patient at risk – non-inferiority to warfarin has been demonstrated.
 - Find and treat cause!
- Less common Mx = AF ablation – technique is becoming more successful with improved technologies, generally considered for younger patients or those with uncontrollable AF at high risk. Success rates vary ~60-70%, however higher in paroxysmal AF.

Complications of MI

- Early:
 - Pericarditis: sudden onset of pain + fever, 2-3 days post MI, pericardial friction rub, saddle shaped ST segment elevation on ECG. NSAIDs.
 - Mural thrombus: stasis of blood in the akinetic region leads to thrombi formation which may embolise.
 - Left ventricular wall rupture: 5-10 days post-op, haemopericardium, cardiac tamponade, death.



- Heart Failure
- Mitral Incompetence/Regurgitation
- Arrhythmias
- Late:
 - Dressler's Syndrome: wks-mths post MI, chest pain, pyrexia, pericardial effusion, ↑ ESR
 - Ventricular aneurysm: 4-6wks post MI, LVF, angina, recurrent VT, persistent ST elevation. Rupture is rare.

Cardiac investigations;

○ STABLE ANGINA – STRESS ECG

○ A positive test is indicated by;

- Ischaemic symptoms
- ST elevation/depression
- Arrhythmia
- Failure of BP to rise – serious – stop protocol.

○ SERUM TROPONIN

- It peaks at 12 hours and can remain elevated for up to 10 days post MI.
- When measured 12 hours post symptoms the sensitivity is almost 100%

○ DVT – DOPPLER ULTRASOUND

For a suspected DVT:

- You first do a screening questionnaire which looks at the likelihood of having a DVT.
- Following from this, if it is unlikely then do D-dimers
- If it is likely then straight away to Doppler USS.

○ Why not thrombophilia screen?

- As clotting factors can be affected by inflammation and so levels won't be accurate necessarily.
- Won't really affect initial management
- Can do after patient has recovered IF the patient has a family history.

INFECTIVE ENDOCARDITIS

- Do a trans-oesophageal echocardiography (TOE)
- Patient has signs that point toward infective endocarditis
- TOE is the most accurate way to image the heart valves and view any vegetations that may be present
- Other uses:
 - Cardiac sources of emboli
 - Review prosthetic valves
 - Also has a role in investigation of aortic dissection
 - Sometimes used to aid cardiac dissection



EPISODIC PALPITATIONS – 24 HOUR TAPE

ECG findings

- **Heart Block:**
 - First degree: PR interval prolonged, > 0.2 s, one P wave per QRS complex, delay along conduction pathway
 - Second degree:
 - Mobitz type 2: PR interval of the conducted beats constant, one P wave not followed by the QRS. More dangerous of second degree heart blocks, as more commonly progresses to third degree. If symptomatic, treat with pacemaker.
 - Wenckebach: progressive lengthening of PR interval, one non-conducted P wave, next conducted beat has a shorter PR interval than preceding conducted beat
 - Third degree: complete dissociation of P wave and QRS complexes. Heart rate ~ 40 bpm (in EMQs at least). Treat with pacemaker
- Wolff-Parkinson-white: accessory conducting bundle – no AV node to delay conduction, a depolarization wave reaches the ventricles early – preexcitation occurs.
 - Short PR interval and delta wave
 - Can cause paroxysmal tachycardia

The danger is pre-excited AF, when AF waves are conducted to the ventricles without being slowed by the AV node, essentially creating ventricular fibrillation.

ST segment:

- **Digoxin effect:**
 - ‘reversed tick’ sloping depression of the ST segment, which can resemble changes seen in myocardial ischaemia
- **Myocardial Infarction:**
 - Anterior: ST segment elevation leads V1-V4
 - Inferior: ST segment elevation leads II, III, aVF
 - Posterior: Tall R wave in V1-2, ST depression V1-V3
- **Pericarditis:**
 - Saddle shaped ST segment elevation (widespread)

Other arrhythmias (don't be scared, these are very unlikely to come up as EMQs, at most 1 of these in a question as a distinction mark, more likely they will just be answer options):

- Jervell-Lange Nielsen – long QT syndrome, autosomal recessive, also causes congenital deafness
- Romano-Ward syndrome – long QT syndrome, can be AR or AD, no deafness
- Catecholaminergic polymorphic VT – stress situations result in syncope and potentially death as heart goes into polymorphic VT (torsade de pointes).
- These are all treated with beta-blocker to prevent arrhythmias occurring and ICD for high risk patients

Side effects of anti-hypertensives

Anti-hypertensives (ACE, Calcium Channel Blocker, Diuretic)



1. A (<50) or (C) (esp if Black)
2. A+C
3. A+C+D
4. Resistant hypertension – consider further diuretic, alpha blocker or beta blocker and consider seeking expert advice

Treatment at 140/90 but other thresholds in disease states. Remember the above, it is easy to remember but impressive if you can reproduce this as it shows you know something of evidence based medicine.

Atenolol: Bronchial + bronchiolar smooth muscles express B2 adrenoreceptors, myocardium expresses B1 adrenoreceptors. Cardioselective B-blockers, which have a greater effect at B1 than B2 receptors, thus cause less bronchoconstriction than nonselective agents such as propranolol. Risk of precipitating bronchospasm is still high and all B-Blockers CI in asthma.

Nifedipine: Gum hyperplasia. Uncommon. Calcium channel blocker

Enalapril: Dry cough. ACE-I - cough due to elevated bradykinin levels

Medical Education Society

Minoxidil: Similar to hydralazine in causing tachycardia and peripheral oedema.

Rarely in

women – causes hypertrichosis, used in male pattern baldness

Hydralazine: Vasodilator anti-hypertensive. Given with B-Blocker and a diuretic to avoid reflex tachycardia and peripheral oedema. Prolonged treatment associated with SLE-like syndrome

Bendrofluazide: Thiazide diuretic, hyponatraemia, hypercalcaemia, Addison's

Clonidine: Vasodilator, dry mouth, sedation, depression, fluid retention, Raynaud's phenomenon

Doxazosin: alpha-adrenoreceptor blocker, also prostatic hyperplasia, postural hypotension, dizziness, headache, fatigue

Losartan: Angiotensin-II receptor antagonist, diarrhoea, taste disturbances, cough, arthralgi

Moxonidine: Centrally acting, dry mouth, headache, dizziness, fatigue, sleep Disturbances



GI Medicine and Surgery

The Acute Abdomen

Note... not all causes of abdo pain are abdo related. MI, LL pneumonia's, aortic dissection etc can all present with pain in the abdomen.

Ureteric colic – colicky pain. Radiates to the groin.

Acute pancreatitis – severe epigastric pain radiating to the back, associated with vomiting. Cullens/ Grey tuners

Acute appendicitis -Periumbilical pain radiating to the right iliac fossa

AAA -Central abdominal pain, expansile pulsatile mass

Biliary colic: Fat, female, 40s, fertile, fair. R upper quadrant. Radiation to shoulder

Peptic ulcer – Epigastric pain, can radiate to back. 2 hrs after a meal. Finger pointing (Gastric ulcer=pain when eating)
epigastric pain relieved by antacids and food, episodes of vomiting coffee grounds,

H pylori can be underlying cause

Intestinal Obstruction – vomiting, distension, colicky pain, constipation

Diverticulitis – ' Left sided appendicitis'. LIF pain. Lack of dietary fibre.
Fever, vomiting, guarding -acute.
Alternating bowel habits, obstruction. Blood PR -chronic

Don't forget MI !!!

Scabies

papular rash (abdomen/ medial thigh; itchy at night)
burrows (in digital web spaces and flexor wrist surfaces)

Dermatitis herpetiformis

All have a gluten sensitive enteropathy symmetrical clusters of urticarial lesions on the occiput, interscapular and gluteal regions, and extensor surfaces of the elbows and knees.

! Tropheryma whippelii bacteria get stuck in the lymphatic drainage systems causing backflow and malabsorption. ExtraGI manifestations (arthritis, fever, lymphadenopathy and organ disease) can be present for years before malabsorption.

Giardia Lamblia. A flagellated protozoa which colonises the small bowel causing partial villous atrophy and malabsorption then moves onto the large bowel causing **watery diarrhoea and horrific flatus. Very common in Eastern Europe and Russia.**



Entamoeba histolytica. A protozoan infection causing chronic diarrhoea which can be bloody, and liver abscess (RUQ tenderness, swinging pyrexia). Stool microscopy demonstrates trophozoites.

Lichen planus

shiny, flat topped mauve spots – inside of wrists, shins lower back. May form a white pattern in the mouth.

Primary biliary cirrhosis Middle aged women

Commonest presenting symptom is fatigue. Pruritus is common and may be intense.

Jaundice appears later. Xanthelasma

Anti-mitochondrial antibodies

associated with RA, thyroid disease

Treatment is with ursodeoxycholic acid. Pruritus treated with colestyramine

Primary sclerosing cholangitis

usually middle aged man pruritus, jaundice, abdo pain

ALP, AMA –ve, may be pANCA +ve

assoc with IBD (UC), beaded appearance on ERCP (due to multiple strictures)

Calcium, phosphate of Alk-Phos table (Haem, Rheum and gastro related)

	Ca	Phosphate	Alk-Phos
Myeloma	UP	ANY	N
Osteoporosis	N	N	N
Paget’s Disease	N	N	Very High
Hyperparathyroidism	UP	DOWN	UP
Osteomalacia	N OR DOWN	N or DOWN	N

Myeloma: Bence Jones Protein (Light Chains of Ig) in urine, Hypercalcaemia with N PHOSPHATE, bone pain, lytic lesions in bone.

Irritable Bowel – pain, altered bowel, constipation alt w/ diarrhoea, improved with flatulence/defecation – no clinical signs! May be worsened with stress, gastroenteritis. Usually in young stressed patients. Exclude other diagnoses (esp. Coeliac, malignancy) before making diagnosis. If patient is >40, and symptoms going on for <6 months, is more ominous

Pilonidal sinus: think hairy and disgusting – smelly discharge, pain, inflammation...

IBD: Crohn’s vs UC



Crohn's: worse PRESENTATION: FEVER, ABDO PAIN, lesser bloody diarrhoea, strictures perforation, fistulae. With skip lesions, non-continuous (cobblestone mucosa). Think bombing and destruction! **But more in non-smokers.**

UC: continuous, much calmer presentation – main symptoms: weight loss and BLOODY DIARRHOEA, but may get a greater Ca risk. **Less in smokers.**

Pathological comparison of UC/Crohn's

Ulcerative colitis	Crohn's Disease
No fissures, fistulae	Fissures, fistulae
Continuous inflammation	Patchy inflammation with skip lesions
Superficial	Transmural
Restricted to large bowel	Anywhere in GI tract
No granulomata, but crypt abscesses	Granulomata

Remember extraarticular manifestations e.g. clubbing, cutaneous (erythema nodosum), ocular (uveitis, episcleritis, iritis), PSC (more with UC)

- Cholecystitis
 - Inflammation of the Gall Bladder
 - **Localised Peritonitis**
 - RUQ tender
 - **Fever**
- Biliary colic
 - Pain from an obstructed Cystic duct or CBD
 - Severe pain that stays for hours
 - Radiates to the right shoulder and right sub scapular region
 - **No fever, peritonitis**
- Ascending cholangitis
 - Infection of the biliary tree (from biliary obstruction)



- **Charcot's triad;** Fever, Jaundice, and right upper quadrant pain
- RIGORS
- **More severe than cholecystitis, SHOCK and JAUNDICE**

Appendicitis. Starts of as central abdominal pain which then becomes localised to the right iliac fossa, accompanied by anorexia and sometimes vomiting and diarrhoea. The patient is pyrexial, with tenderness and guarding in the RIF.

Hirschsprung's Disease: RARE, congenital, missing autonomic nerves that control peristalsis

Pelvic trauma: normally leads to INCONTINENCE if nerves are damaged!

IBS: pellet like stools: "rabbit-droppings"

Plummer-Vinson's OR Patterson-Brown-Kelly syndrome: post cricoid web plus iron deficiency anaemia

Myasthenia gravis – BULBAR PALSY: ptosis, diplopia, blurred vision, difficulty swallowing, dysarthria (articulation)

Small Bowel Obstruction; Colicky abdo pain, vomiting early (before constipation), previous abdo surgery causing adhesions, also....look for hernia.

Large bowel obstruction; Vomiting occurs late...after constipation. (Distension, absolute constipation, vomiting, and colicky abdo pain).

Ruptured ectopic pregnancy, surgical emergency, must do pregnancy test in woman of reproductive ages!

HAEMATEMESIS

Gastric carcinoma

- hx of symptoms e.g. dyspepsia, nausea, anorexia, weight loss and especially early satiety
- Gastric erosions

Stress ulceration leading to erosions of the stomach is a complication of significant burns (Curling's ulcer) as well as other traumatic injuries, systemic sepsis, intracranial lesions (Cushing's ulcer) and organ failure

Oesophageal varices

- raised MCV (due to alcohol induced bone marrow toxicity) and INR (due to severe hepatic dysfunction) – make it likely diagnoses

Mallory-Weiss tear



- classic history bleeding from mucosal vessels damaged by a tear in the mucosa at the gastrooesophageal junction as a result of repeated retching/ vomiting (almost always due to alcohol excess usually self limiting)

Zollinger-Ellison syndrome

- rare disorder caused by gastrin-secreting tumour, either in the islet cells of the pancreas or in the duodenal wall
- release of gastrin stimulates the production of large quantities of HCl in the gastric antrum leading to predominantly distal ulceration, measure gastrin levels and tumour imaging

Oesophageal Carcinoma

– rapidly progressive dysphagia elderly weight loss and associated hypoproteinaemia, looking wasted

Boerhaave syndrome

aka oesophageal perforation due to vomiting

Pts have chest pain, odynophagia, cyanosis, subcutaneous emphysema and shock. Usually caused by alcohol or excessive eating.

DISEASES OF THE LIVER

In general, liver enzyme patterns:

- Hepatocyte damage=Raised ALT and AST
 - Hepatitis
- Biliary canalicular damage=Raised ALP
 - Gallstones
 - Any cause of cholestasis
- Short term alcohol abuse= γ -GT
 - Normally rises with ALP
 - Abnormally high ALP with normal γ -GT=Pagets
 - Isolated rise in GGT suggests short term alcohol abuse
 - A 2:1 ratio of AST: ALT is characteristic of chronic alcohol abuse
- Bilirubin
 - Conjugated Bilirubin=Obstructive cause/hepatic cause
 - Unconjugated Bilirubin=Haemolysis/prehepatic jaundice
- **Pre-hepatic jaundice**
 - Most commonly due to haemolysis
 - Rise in un-conjugated bilirubin
 - Normal conjugated as the liver is functioning normally
 - Normal stool colour and normal Urine colour

Gilbert's Disease:

Normal liver biochemistry, absence of liver signs



5-10% of the population have it
Manifests as intermittent jaundice e.g. after fasting, infection
Increase in unconjugated Bilirubin
There are five known inherited defects of bilirubin metabolism
Crigler Najjar (Type one and two)
(uncon, brain damage)
Dubin Johnson (con, assym)
Rotor Syndrome (con, assym)

Hepatic jaundice

- Due to damage to the liver itself
- High ALT and AST compared to ALP (only moderately raised)
- Conjugated bilirubin

Viral hepatitis:

-Hepatitis A: faecal-oral transmission, RNA virus (often after eating shellfish). Presents with fever, RUQ pain, jaundice, and flu-like prodromal illness (distaste for cigarettes is also classic). Anti HAV IgM antibody in acute infection. Supportive treatment

-Hepatitis B: transmitted vertically (mother to child) or through blood (transfusion, drug needles, tattoos etc). A DNA virus. May present with an acute hepatitis like picture. Small percentage of Hep B acquired as an adult goes on to become chronic.

Hep B serology:

-HbSAg is seen 1-6 months after exposure. Persistence for >6 months indicates chronic HBV infection

-Presence of HbEAg indicates high infectivity

-Antibodies to HbcAg (core antigen) indicates past infection

-Antibodies to HbSAg alone indicates vaccination

-Hepatitis C: transmitted through blood e.g. tattoos, sharing needles. An RNA virus. Is usually asymptomatic but c. 80% go on to develop chronic hepatitis. Look for anti HCV antibodies and HCV RNA

Post-hepatic jaundice

- Most commonly due to obstruction
 - Rise in conjugated bilirubin as liver functions normally
 - Rise in ALP and GGT more than others
 - Pale stool and dark urine (excess conjugated bilirubin is re-circulated)
-
- **Courvoisier's law**
 - In the presence of painless jaundice and a palpable gall bladder the cause is not gall stones – likely pancreatic cancer
 - In gallstone disease the gall bladder is **small and shrunken**

Other liver diseases to know for EMQs:



Wilson's Disease:

- Autosomal recessive disorder of copper metabolism, resulting in toxic accumulation of copper in liver and CNS (incl basal ganglia)
- In children presents as acute hepatitis
- In adults commonly presents with neuropsychiatric symptoms e.g. asymmetric tremor, Parkinsonian features, depression, emotional lability
- Examination: Kayser-Fleischer rings (in cornea, seen on slit lamp examination), azure lunulae (blue nails)
- Low serum copper and caeruloplasmin, increased urinary copper excretion
- Treat with penicillamine

Hereditary haemochromatosis:

- Autosomal recessive condition of iron overload, common in N Europeans
- Vague non-specific symptoms
- Bronze skin pigmentation (like a permanent tan)
- Diabetes, cardiomyopathy
- Hypogonadism (due to pituitary involvement), arthralgia
- High transferrin saturation, liver biopsy with Pearl's stain to show iron deposition
- Treat with venesection

Alpha 1 antitrypsin deficiency:

- think of this in any young patient presenting with COPD (either a smoker or a non-smoker), and liver involvement (chronic hepatitis, cirrhosis)

Miscellaneous:

HYDATID LIVER CYST

- It is common in sheep farmers – transmitted to humans via dog excrement that have eaten sheep offal.
- The best way to image this cyst is a CT scan

General GI Investigations

Urgent endoscopy for GASTRIC/OESOPHAGEAL cancer suspicion

Initial test for H.pylori is stool antigen test/urease breath test...but gold standard is gastric biopsy.

Most appropriate initial investigation in celiac is antibody test, Anti-endomysial Abs

- Anti tissue transglutaminase is also present in coeliac disease, but anti-endomysial has higher sensitivity and specificity.
- Gold standard is duodenal biopsy, but it is invasive (showing villous atrophy and crypt hyperplasia)

Crohn's can be investigated through Barium follow through. But endoscopy is best test

Initial investigation of gallstones is US, ERCP if diagnosis is unsure.



Achalasia, Manometry is an accurate technique (can also do Barium swallow, which shows birds beak appearance)

FAECAL ELASTASE, A reduced concentration in stool suggest moderate or severe chronic pancreatitis

RECTAL BLEEDING

Colonic carcinoma – hx of change of bowel habit and weight loss, elderly man, dark red rectal bleeding, FBC: anaemia ACD -typical for this pt

Ascending colon-Tumour presents late as there is space for expansion **so...low** weight and Hb Blood is not fresh, it is DARK RED.

Descending colon-Obstruction at earlier stage

Left iliac fossa mass, Blood not fresh, it is DARK RED.

Rectum-Tenesmus , Fresh PR bleeding, Mass on PR

Colonic polyp – fresh bleeding, absence of other symptoms or findings O/E, separate from stool

Haemorrhoids – similar to polyp but: bright red rectal bleeding in young pt: local anal cause, no pain on defecation, some after wiping.

Infective colitis – foreign travel short hx of abdominal pain and bloody diarrhoea (dysentery)

Ulcerative colitis – young pt, long hx of bloody diarrhoea, microcytic anaemia: chronic blood loss WCC and ESR: underlying inflammatory conditions

Crohn's disease – fever, bloody diarrhoea, mucous PR and weight loss, young pt, clinically anaemic and sometimes aphthous ulceration of the mouth, sigmoidoscopy: mucosal ulceration

Diverticular disease – elderly ladies, LIF pain and constipation, nausea

- Out pouching of the GUT wall=**diverticulum**
- **Diverticulosis** means that diverticulum are present
- **Diverticulitis** is inflammation of the diverticulum
- Watch out for complications;
 - **Diverticulitis**
 - **Perforation (ileus, peritonitis and shock)**
 - **Haemorrhage (sudden and painless)**
 - **Fistulae**
 - **Abscesses (swinging fever, boggy rectal mass)**
 - **Strictures (obstruction)**

Ischaemic colitis – complication post AAA repair due to hypoperfusion of the distal large

intestine, developing diarrhoea elderly pt with bloody diarrhoea



ANORECTAL CONDITIONS

Anal carcinoma – hx of bright red streaking after stool with blood, anal pain and discharge, raised irregular ulcer on anal verge

Rectal prolapse – hx of large lump at anus after straining at stool sometimes on standing and walking passage of blood and mucus, faecal incontinence, exposed mucosa is red and thrown into concentric folds.

Anal fistula – hx of pruritus ani, watery, sometimes purulent discharge from the anus causing excoriation of the perianal skin, hx of RIF pain, sometimes N&V, some weight loss – some of the symptoms associated with Crohn's – cause in 50% of fistulas

Fissure

- Crack in anal canal
- Pain sitting down and when defecating
- **Most commonly due to constipation and straining**

Perianal haematoma – brief hx of increasing anal pain worse on sitting moving or defecation, painful subcutaneous lump at anal verge, caused by rupture or acute thrombosis of one of the small veins of the subcutaneous perianal plexus. **Hard lump, red-purple**

Perianal abscess

Throbbing pain that progresses, associated with fever

Levator ani syndrome

aka proctalgia fugax

Cramp of the levator ani muscle

Sudden and severe pain

Associated with a need to defecate

Often occurs in the night

Skin tags

- Benign
- Painless, can be associated with previous Ano-rectal pathology

Anal warts

- Due to HPV
- STD so look for history of promiscuity

ASCITES

Adenocarcinoma cells in the ascitic fluid – Ovarian Carcinoma

Granulomata in the ascitic fluid – TB archetypal granulomatous disease, none of the



other produce granulomas

Hypercholesterolemia – Nephrotic Syndrome, heavy proteinuria which leads to hypoalbuminaemia peripheral oedema and ascites nearly all pts have hyperlipidaemia with raised cholesterol triglycerides and lipoproteins

A very high serum amylase concentration – Acute pancreatitis diagnosis depends on measurement of serum amylase, raised in other acute abdominal emergencies e.g. perforated duodenal ulcer

A very high serum concentration of gamma-glutamyl transferase – Alcoholic cirrhosis, microsomal enzyme found in liver activity induced by phenytoin and alcohol,

Dysphagia:

- Bulbar= LMN, Pseudobulbar= Upper MN
- Immunosuppressed? Opportunistic infections
- Constant & progressive dysphagia + weight loss= malignancy
- IDA+ post-cricoid web= Plummer Vinson syndrome (aka Patterson Brown Kelly)

Malabsorption:

- Coeliac-
 - Autoimmune
 - Antibodies: α gliadin, transglutaminase, anti-endomysial
 - Duodenal biopsy: subtotal villous atrophy + crypt hyperplasia
- HIV
 - Opportunistic infections
- Cystic fibrosis
 - Defective chloride secretion and increases sodium absorption across airway epithelium
 - Resp: Recurrent chest infections
 - GI: pancreatic insufficiency? diarrhoea
 - Sweat test

Constipation:

- **Diverticular** disease
 - Small out-pouchings of LI wall
 - 50% 50yo affected
 - L/RIF pain, diarrhoea +/- constipation
 - Diverticulitis = infection of diverticuli (constant severe pain and fever)
- **Hirschsprung's** disease (congenital aganglionic megacolon)
 - Enlargement of the colon, caused by bowel obstruction resulting from an aganglionic section of bowel (the normal enteric nerves are absent) that starts at the anus and progresses upwards
 - Baby who has not passed meconium within 48 hours of delivery. Diagnosis is made by suction biopsy of the distally narrowed segment



- **Sigmoid volvulus**

- Bowel twists on mesentery (coffee bean shape on AXR)
- Severe and rapid closed loop obstruction
- Elderly constipated patient
- Perf and faecal peritonitis

Diarrhoea:

- **IBD**

- UC (GCS, Mesalazine, Azathioprine)
- CD (GCS, Azathioprine, Infliximab)

- **IBS**

- Mebeverine, peppermint oil

- **Infective**

- Main microbes that cause bloody diarrhoea;
 - **Clostridium difficile (hospitalised elderly patient on antibiotics)**
 - **Shigella (bloody low volume stools)**
 - **Campylobacter (associated with Guillain-Barre)**
 - **EHEC (Enterohaemorrhagic E.coli)**
 - **Entamoeba histolytica**
 - **Bacillus cereus (reheated rice)**

- Rehydration & AB (controversial)
- Ciprofloxacin (Quinolone) – Severe bacterial
- Doxycycline (Tetracycline) – Broad spectrum
- Amoxicillin (Beta lactam) – Broad spectrum, GI SE
- Codeine – Chronic and persistent

Stomata:

- Artificial union between two conduits or a conduit and the outside
- Ileal conduit – standard (perm urostomy)
- Ileostomy (Fluid motions inc active enzymes)
 - Loop (Temporary protection of distal stuff)
 - End (Usually post colectomy e.g UC)
- UC emergency op or elective rectal excision
- Colostomy (Formed faeces... nice)
 - Loop/Defunctioning (Temporary protection of distal stuff) e.g. Colon CA palliation
 - End (Proximal section of bowel brought out and distal end resected or left in place (Hartmans)) e.g. Perf diverticulum
- *Prolapse*
 - Section of bowel comes out, telescope style
 - Often not painful, obv requires prev stoma
- *Parastomal hernia*
 - Protrusion of bowel underneath stoma incision
- Colostomies
- Dragging sensation and surgical correction



Abdominal surgery (not strictly necessary for third year)

Anterior resection (small rectal cancer that does not invade the sphincter)

- Essentially the effected rectum is removed and the sigmoid is attached to the remaining rectum.
- Anal sphincter is intact

Abdomino-perineal resection (large rectal cancer invading the sphincter)

- The cancer is so low down and advanced that surgery will result in removal of the anal sphincters, rendering the patient incontinent.
- Remove the rectum and anus, leaving a permanent colostomy.

Hartmann's procedure (perforated diverticulum)

- **Sigmoid colon is removed (site of perforation)**
- Following perforation anastomosis between 2 sets of bowel is dangerous.
- Patient has a temporary colostomy
- Colostomy is reversed later.

Proctocolectomy (FAP and UC)

- Whole colon is removed.

Right Hemi-colectomy

- Severe Crohn's

Scars

The scar related to having a liver transplant=Mercedes Benz Scar

Post Elective C-Section=Pffannensteil Scar

Horizontal Appendectomy scar=Lanz Scar

Appendectomy scar that follows the slant of the inguinal canal=Grid Iron Scar